## REMARKS

The Office Action has been carefully reviewed. The claims are presently under final action. However, the amendment to claim 18 complies with a matter of form as an objected to claim. Additionally, the presented remarks are believed to place the application in condition for allowance. Accordingly, this submission is requested to be admitted under 36 C.F.R. 1.116. Reconsideration and allowance of the claims is respectfully requested. A petition and fee for a two-month extension of time is submitted herewith.

Initially, the Examiner is thanked for providing the opportunity to discuss the application at the personal interview held on Monday March 6, 2006. The interview summary sheet accurately reflects the discussion including: that agreement was reached; that claim 14 would be amended to distinguish Bruchhaus (WO 03/021656); that claim 19 would be cancelled as redundant; and that claim 18 would be amended to overcome the objection and placed in condition for allowance.

Claim 18 stands objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form. The Office Action noted that as a result of the amendments made to claim 14 such that x cannot be 1, claim 14 now requires some amount of ruthenium in the buffer layer; claim 18 limits the buffer layer to strontium titanate (i.e. having no ruthenium) and therefore fails to further limit the buffer layer of claim 1 which must contain some ruthenium.

Accordingly, claim 18 has been amended into independent form. Claim 18 as amended also includes a thickness limitation for the layer of a high temperature superconducting material, such a limitation supported by the language in the current specification at page 10, lines 10-12. Further, it is noted that with regards to the earlier applied reference of Miller et al. (U.S. Patent No. 6,410,487), that Miller taught only bulk superconductors wherein the bulk superconductor has a thickness of not less than about 100 microns (as opposed to the 1 to 2 microns of claim 18). Applicants further point to the results shown in Example 4 and related Fig. 2 obtained by employing such a

strontium titanate buffer layer, specifically, critical current densities as high as about 3 X $10^6$ amperes per square centimeter. That such values can be obtained with a strontium titanate buffer layer is unexpected from any teachings in the prior art. Accordingly, claim 18 is urged to be allowable.

Claims 14-16, 19, and 20 stand rejected under 35 U.S.C. 103(a) as being obvious over Jia et al. (U.S. Patent No. 6,756,139) in view of Bruchhaus (WO 03/021656). The Office Action stated that Jia et al. teaches a Ni-alloy substrate, an IBAD-MgO layer, a strontium ruthenate (SRO) layer, and a YBCO layer (see Figure 1). Although Jia et al. teaches that the SRO layer has many properties and characteristics ideal to this architecture, Jia et al. does not teach that the layer may be $SrTi_xRu_{1-x}O_s$. Further, Bruchhaus teaches that when using SRO in ferroelectric applications, problems arise including formation of undesirable compounds, such as $RuO_2$, SrO, and $SrCO_3$, upon exposure to the atmosphere and annealing and that undesirable properties may result. Bruchhaus therefore substitutes SRO enriched with $TiO_2$ in place of SRO to avoid the problems discussed.

The Office Action concluded that it would have been obvious to modify the superconductor architecture of Jia et al. by enriching the SRO layer with some $TiO_2$ because Bruchhaus teaches some problems are associated with SRO in similar processing and applications and that the addition of $TiO_2$ alleviates these problems.

Applicants submit that claims 14 and 20 have been amended to clarify that the mixture of strontium titanate and strontium ruthanate represented by the formula $SrTi_xRu_{1-x}O_3$ is a single phase material. Applicants have submitted a declaration by one of the inventors, i.e., Stephen R. Foltyn. His declaration sets out that analysis of the claimed layer of $SrTi_xRu_{1-x}O_3$ where $0 < x < 1$ did not show the multiphase material described by Bruchhaus, i.e., the STO and unreacted $TiO_2$ grains described at their page 7. Accordingly, withdrawal of the rejection of Claims 14-16, 19, and 20 is urged.

Claims 14-17, 19, and 20 stand rejected under 35 U.S.C. 103(a) as being obvious over Jia et al. (U.S. Patent No. 6,800,591) in view of Bruchhaus (WO 03/021656). The Office Action stated that Jia et al. teaches a Ni-alloy substrate, an IBAD-MgO layer, a strontium ruthenate (SRO) layer, and a YBCO layer (see Figure 1). Jia et al. further teaches that an additional buffer layer, which may be CeO2 may be used between the SRO and YBCO layers. Although Jia et al. teaches that the SRO

layer has many properties and characteristics ideal to this architecture, Jia et al. does not teach that the layer may be $SrTi_xRu_{1-x}O_s$. Further, Bruchhaus teaches that when using SRO in ferroelectric applications, problems arise including formation of undesirable compounds, such as $RuO_2$, SrO, and $srCO_3$, upon exposure to the atmosphere and annealing and that undesirable properties may result. Bruchhaus therefore substitutes SRO enriched with $TiO_2$ in place of SRO to avoid the problems discussed.

The Office Action concluded that it would have been obvious to modify the superconductor architecture of Jia et al. by enriching the SRO layer with some $TiO_2$ because Bruchhaus teaches some problems are associated with SRO in similar processing and applications and that the addition of $TiO_2$ alleviates these problems.

Again, applicants submit that claims 14 and 20 have been amended to clarify that the mixture of strontium titanate and strontium ruthanate represented by the formula $SrTi_xRu_{1-x}O_3$ is a single phase material. Applicants have submitted a declaration by one of the inventors, i.e., Stephen R. Foltyn. His declaration sets out that analysis of the claimed layer of $SrTi_xRu_{1-x}O_3$ where $0 < x < 1$ did not show the multiphase material described by Bruchhaus, i.e., the STO and unreacted $TiO_2$ grains described at their page 7. Accordingly, withdrawal of the rejection of Claims 14-17, 19, and 20 is urged.

Finally, applicants have submitted a second declaration of Stephen R. Foltyn to address any issues with regards to anticipation of claims over Holesinger et al. (U.S. Patent No. 6,716,545). While this rejection was removed from the current Office Action, as the Holesinger reference taught in Example 4, a copper-doped strontium titanate layer, and pending claim 18 is directed to a buffer layer of strontium titanate, the

applicants submit that the invention disclosed but not claimed in the Holesinger patent was derived from the inventors of this application and is thus not the invention "by another".

In view of the foregoing amendments and remarks, claims 14-18 and 20 are urged to be allowable over 35 U.S.C. 102 and 103. If the Examiner believes there are any unresolved issues despite this amendment, the Examiner is urged to contact the applicants' attorney undersigned below for a telephonic interview to resolve any such issue. A favorable action is solicited.

Respectfully submitted,

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Bruce H Cottrell
Signature of Attorney

Reg. No. 30,620
Phone (505) 667-9168

Bruce H. Cottrell
Los Alamos National Laboratory
LC/IP, MS A187
Los Alamos, New Mexico 87545